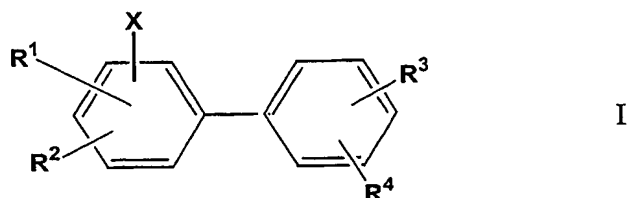


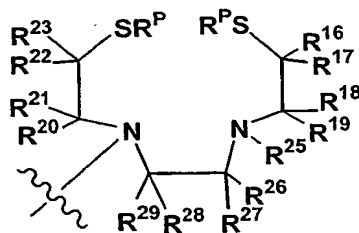
WHAT IS CLAIMED IS:

1. A compound of general Formula I:



or a pharmaceutically acceptable salt thereof, wherein

$R^1$ ,  $R^2$  and  $R^3$  in each instance is independently selected from the group consisting of hydrogen, halogen,  $C_{1-5}$  alkyl, cyano, carboxy( $C_{1-5}$ )alkyl, trifluoromethyl, nitro, methylamino, dimethylamino, halo( $C_{1-5}$ )alkyl, hydroxy( $C_{1-5}$ )alkyl,  $(Bu)_3Sn-$ ,  $(Bu)_3Sn(C_{1-5})$ alkyl, formyl, and the tetradentate metal ligand moiety having the following formula:



wherein,

$R^4$  is selected from the group consisting of:

- a.  $C_{1-5}$  alkylthio,
- b. halo( $C_{1-5}$ )alkyl,
- c. halo( $C_{1-5}$ )alkoxy,
- d. carboxy( $C_{1-5}$ )alkyl,
- e. hydroxy,
- f.  $C_{1-5}$  alkoxy,
- g. hydroxy( $C_{1-5}$ )alkyl,

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- h.  $\text{NR}^5\text{R}^6$ , wherein  
 $\text{R}^5$  and  $\text{R}^6$  are independently hydrogen, halo( $\text{C}_{1-5}$ )alkyl or  $\text{C}_{1-5}$  alkyl,
- i. phenyl( $\text{C}_{1-5}$ )alkyl,
- j.  $\text{C}_{6-10}$  aryl,
- k. heteroaryl,
- l. heterocycle,
- m. heterocycle( $\text{C}_{1-5}$ )alkyl, and
- n.  $\text{C}_{3-6}$  cycloalkyl,

wherein said phenyl( $\text{C}_{1-5}$ )alkyl,  $\text{C}_{6-10}$  aryl, heteroaryl, heterocycle, heterocycle( $\text{C}_{1-5}$ )alkyl or  $\text{C}_{3-6}$  cycloalkyl is substituted with one of the following:  $\text{C}_{1-5}$  alkylthio,  $\text{C}_{1-5}$  alkylsulfonyl, methoxy, hydroxy, dimethylamino or methylamino,

$\text{R}^{16}$ ,  $\text{R}^{17}$ ,  $\text{R}^{18}$ ,  $\text{R}^{19}$ ,  $\text{R}^{20}$ ,  $\text{R}^{21}$ ,  $\text{R}^{22}$ ,  $\text{R}^{23}$ ,  $\text{R}^{25}$ ,  $\text{R}^{26}$ ,  $\text{R}^{27}$ ,  $\text{R}^{28}$  and  $\text{R}^{29}$  are independently selected from the group consisting of hydrogen, halogen,  $\text{C}_{1-5}$  alkyl, cyano, carboxy( $\text{C}_{1-5}$ )alkyl, hydroxy( $\text{C}_{1-5}$ )alkyl, trifluoromethyl, nitro, methylamino, dimethylamino, halo( $\text{C}_{1-5}$ )alkyl, phenyl( $\text{C}_{1-5}$ )alkyl,  $\text{C}_{3-6}$  cycloalkyl, heterocycle ( $\text{C}_{1-5}$ )alkyl and carbonyl, and  $\text{R}^P$  is a sulhydryl protecting group,

and,

X is hydrogen,  $^{125}\text{I}$ ,  $^{123}\text{I}$ ,  $^{131}\text{I}$ ,  $^{18}\text{F}$ ,  $^{76}\text{Br}$ ,  $^{77}\text{Br}$  or  $\text{Sn}(\text{alkyl})_3$ .

2. A compound of claim 1, wherein  
 $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  are hydrogen or  $\text{C}_{1-5}$  alkyl.

3. A compound of claim 2, wherein  
 $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  are hydrogen,

and,

$\text{R}^4$  is halo( $\text{C}_{1-5}$ )alkyl, hydroxy,  $\text{C}_{1-5}$  alkoxy or  $\text{NR}^5\text{R}^6$ , wherein

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$R^5$  and  $R^6$  are independently hydrogen, halo( $C_{1-5}$ )alkyl or  $C_{1-5}$  alkyl.

4. A compound of claim 3, wherein

$R^4$  is  $NR^5R^6$ , wherein

$R^5$  and  $R^6$  are independently hydrogen, halo( $C_{1-5}$ )alkyl or  $C_{1-5}$  alkyl.

5. A compound of claim 1, wherein

X is  $^{123}\text{I}$  or  $^{18}\text{F}$ .

6. The compound of claim 1, wherein

$R^1$  is methylamino or dimethylamino,

$R^2$  is hydrogen,

$R^3$  is halo( $C_{1-5}$ )alkyl or  $(\text{Bu}_3)\text{Sn}(\text{C}_{1-5})\text{alkyl}$ ,

$R^4$  is hydroxy or hydroxy( $C_{1-5}$ )alkyl,

and,

X is hydrogen.

7. The compound of claim 6, wherein

$R^1$  is dimethylamino,

$R^3$  is  $^{18}\text{fluoro}(\text{C}_{1-5})\text{alkyl}$ ,

and,

$R^4$  is hydroxy.

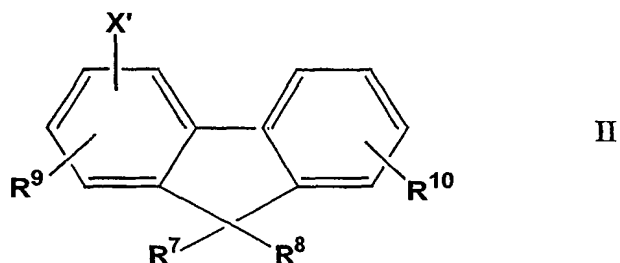
8. The compound of claim 7, wherein

$R^3$  is  $^{18}\text{fluoromethyl}$  or  $^{18}\text{fluoroethyl}$ .

9. The compound of claim 8, wherein

$R^3$  is  $^{18}\text{fluoroethyl}$ .

10. A compound of general Formula II:



or a pharmaceutically acceptable salt thereof, wherein:

$R^9$  and  $R^{10}$  in each instance is independently selected from the group consisting of:

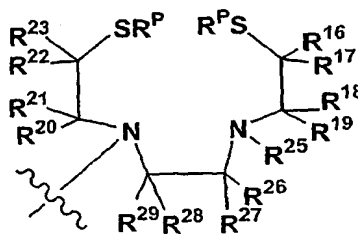
- a. hydrogen,
- b.  $C_{1-5}$  alkyl,
- c. cyano,
- d. trifluoromethyl,
- e. nitro,
- f. halogen,
- g. hydroxy( $C_{1-5}$ )alkyl,
- h. halo( $C_{1-5}$ )alkyl,
- i.  $C_{1-5}$  alkylthio,
- j. halo( $C_{1-5}$ )alkoxy,
- k. carboxy( $C_{1-5}$ )alkyl,
- l. hydroxy,
- m.  $C_{1-5}$  alkoxy,
- n.  $NR^{11}R^{12}$ , wherein
  - $R^{11}$  and  $R^{12}$  are independently hydrogen, halo( $C_{1-5}$ )alkyl or  $C_{1-5}$  alkyl,
- o. phenyl( $C_{1-5}$ )alkyl,
- p.  $C_{6-10}$  aryl,
- q. heteroaryl,
- r. heterocycle,

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- s. heterocycle(C<sub>1-5</sub>)alkyl, and  
 t. C<sub>3-6</sub> cycloalkyl,

wherein said phenyl(C<sub>1-5</sub>)alkyl, C<sub>6-10</sub> aryl, heteroaryl, heterocycle, heterocycle(C<sub>1-5</sub>)alkyl or C<sub>3-6</sub> cycloalkyl is substituted with one of the following: C<sub>1-5</sub> alkylthio, C<sub>1-5</sub> alkylsulfonyl, methoxy, hydroxy, dimethylamino or methylamino,

- u. the tetradentate metal ligand moiety having the following formula:



wherein, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup> and R<sup>29</sup> are independently selected from the group consisting of hydrogen, halogen, C<sub>1-5</sub> alkyl, cyano, carboxy(C<sub>1-5</sub>)alkyl, hydroxy(C<sub>1-5</sub>)alkyl, trifluoromethyl, nitro, methylamino, dimethylamino, halo(C<sub>1-5</sub>)alkyl, phenyl(C<sub>1-5</sub>)alkyl, C<sub>3-6</sub> cycloalkyl, heterocycle (C<sub>1-5</sub>)alkyl and carbonyl, and R<sup>P</sup> is a sulhydryl protecting group,

R<sup>7</sup> and R<sup>8</sup> in each instance is independently selected from the group consisting of hydrogen, hydroxy, C<sub>1-5</sub> alkyl, C<sub>1-5</sub> alkoxy, halogen, carboxy(C<sub>1-5</sub>)alkyl, trifluoromethyl, and halo(C<sub>1-5</sub>)alkyl, phenyl(C<sub>1-5</sub>)alkyl, C<sub>3-6</sub> cycloalkyl, heterocycle(C<sub>1-5</sub>)alkyl, or R<sup>7</sup> and R<sup>8</sup> can be taken together to form a carbonyl, and,

X' is <sup>125</sup>I, <sup>123</sup>I, <sup>131</sup>I, <sup>18</sup>F, <sup>76</sup>Br, <sup>77</sup>Br or Sn(alkyl)<sub>3</sub>.

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11. A compound of claim 10, wherein  
R<sup>9</sup> is hydrogen.

12. A compound of claim 11, wherein  
R<sup>7</sup> and R<sup>8</sup> in each instance is independently selected from the group  
consisting of hydrogen, hydroxyl, C<sub>1-5</sub> alkyl, halogen, and halo(C<sub>1-5</sub>)alkyl, or  
R<sup>7</sup> and R<sup>8</sup> can be taken together to form a carbonyl.

13. A compound of claim 12, wherein  
R<sup>10</sup> is selected from the group consisting of cyano, nitro and NR<sup>11</sup>R<sup>12</sup>,  
wherein

R<sup>11</sup> and R<sup>12</sup> are independently hydrogen or C<sub>1-5</sub> alkyl,

and,

R<sup>7</sup> and R<sup>8</sup> are independently hydrogen or hydroxyl.

14. A compound of claim 13, wherein  
R<sup>10</sup> is NR<sup>11</sup>R<sup>12</sup>, wherein

R<sup>11</sup> and R<sup>12</sup> are independently hydrogen, methyl or ethyl,

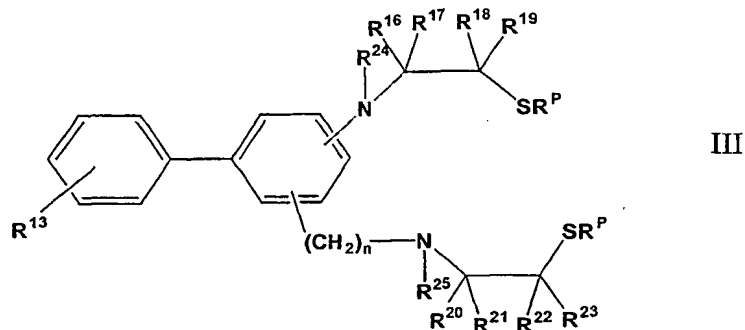
and,

R<sup>7</sup> and R<sup>8</sup> are both hydrogen.

15. The compound of claim 14, wherein  
X' is <sup>123</sup>I or <sup>18</sup>F.

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16. A compound of general Formula III:



or a pharmaceutically acceptable salt thereof, wherein:

n is zero or one,

R<sup>13</sup> is selected from the group consisting of:

- a. C<sub>1-5</sub> alkyl,
- b. cyano,
- c. trifluoromethyl,
- d. nitro,
- e. halo(C<sub>1-5</sub>)alkyl,
- f. C<sub>1-5</sub> alkylthio,
- g. halogen,
- h. halo(C<sub>1-5</sub>)alkoxy,
- i. carboxy(C<sub>1-5</sub>)alkyl,
- j. hydroxy,
- k. hydroxy(C<sub>1-5</sub>)alkyl,
- l. C<sub>1-5</sub> alkoxy,
- m. NR<sup>14</sup>R<sup>15</sup>, wherein  

R<sup>14</sup> and R<sup>15</sup> are independently hydrogen,  
halo(C<sub>1-5</sub>)alkyl or C<sub>1-5</sub> alkyl,
- n. phenyl(C<sub>1-5</sub>)alkyl,
- o. C<sub>6-10</sub> aryl,
- p. heteroaryl,
- q. heterocycle,

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- r. heterocycle(C<sub>1-5</sub>)alkyl, and
- s. C<sub>3-6</sub> cycloalkyl,

wherein said phenyl(C<sub>1-5</sub>)alkyl, C<sub>6-10</sub> aryl, heteroaryl, heterocycle, heterocycle(C<sub>1-5</sub>)alkyl or C<sub>3-6</sub> cycloalkyl is substituted with one of the following: C<sub>1-5</sub> alkylthio, C<sub>1-5</sub> alkylsulfonyl, methoxy, hydroxy, dimethylamino or methylamino,

R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup> and R<sup>25</sup> in each instance is independently selected from the group consisting of hydrogen, halogen, C<sub>1-5</sub> alkyl, cyano, carboxy(C<sub>1-5</sub>)alkyl, hydroxy(C<sub>1-5</sub>)alkyl, trifluoromethyl, nitro, methylamino, dimethylamino, halo(C<sub>1-5</sub>)alkyl, phenyl(C<sub>1-5</sub>)alkyl, C<sub>3-6</sub> cycloalkyl, heterocycle, heteroaryl, C<sub>6-10</sub> aryl, (C<sub>1-5</sub>)alkyl and carbonyl, and,

R<sup>P</sup> is a sulfhydryl protecting group.

17. A compound of claim 16, wherein

R<sup>13</sup> is NR<sup>14</sup>R<sup>15</sup>, wherein

R<sup>14</sup> and R<sup>15</sup> are independently hydrogen or C<sub>1-5</sub> alkyl.

18. A compound of claim 17, wherein

n is one,

R<sup>16</sup> and R<sup>17</sup> are both hydrogen or are taken together to form a carbonyl,

and,

R<sup>18</sup>, R<sup>19</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup> and R<sup>25</sup> in each instance is independently selected from the group consisting of hydrogen and C<sub>1-5</sub> alkyl.

19. A compound of claim 18, wherein

R<sup>16</sup>, R<sup>17</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup> and R<sup>25</sup> are hydrogen,

and,

R<sup>18</sup> and R<sup>19</sup> are both C<sub>1-5</sub> alkyl.



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20. A compound of claim 18, wherein  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{24}$  and  $R^{25}$  are hydrogen, and,  $R^{22}$  and  $R^{23}$  are both  $C_{1-5}$  alkyl.

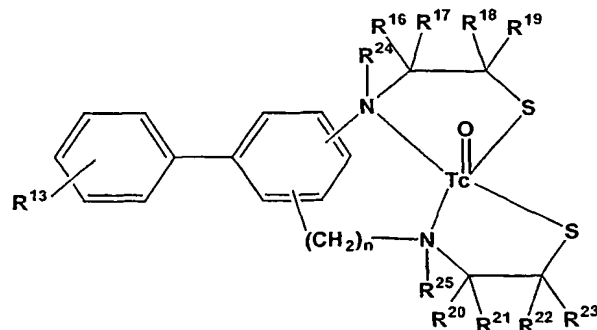
21. A compound of claim 18, wherein  $R^{16}$  and  $R^{17}$  are taken together to form a carbonyl.

22. A compound of claim 21, wherein  $R^{18}$  and  $R^{19}$  are both  $C_{1-5}$  alkyl, and,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  are hydrogen.

23. A compound of claim 21, wherein  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{24}$  and  $R^{25}$  are hydrogen, and,  $R^{22}$  and  $R^{23}$  are both  $C_{1-5}$  alkyl.

24. A compound of claim 21, wherein  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  are hydrogen.

25. A radioisotope complex of a compound of claim 18 having the Formula:



provided that one of  $R^{24}$  and  $R^{25}$  is selected from the group consisting of:

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- a. hydrogen,
- b. C<sub>1-5</sub> alkyl,
- b. trifluoromethyl,
- c. halo(C<sub>1-5</sub>)alkyl,
- d. carboxy(C<sub>1-5</sub>)alkyl,
- e. phenyl(C<sub>1-5</sub>)alkyl,
- f. C<sub>6-10</sub> aryl,
- g. heteroaryl,
- h. heterocycle,
- i. heterocycle(C<sub>1-5</sub>)alkyl, and
- j. C<sub>3-6</sub> cycloalkyl,

wherein said phenyl(C<sub>1-5</sub>)alkyl, C<sub>6-10</sub> aryl, heteroaryl, heterocycle, heterocycle(C<sub>1-5</sub>)alkyl or C<sub>3-6</sub> cycloalkyl is substituted with one of the following: C<sub>1-5</sub> alkylthio, C<sub>1-5</sub> alkylsulfonyl, methoxy, hydroxy, dimethylamino or methylamino,

the other of R<sup>24</sup> and R<sup>25</sup> represents an unsubstituted position.

26. A complex of claim 25, wherein

R<sup>13</sup> is NR<sup>14</sup>R<sup>15</sup>, wherein

R<sup>14</sup> and R<sup>15</sup> are independently hydrogen or C<sub>1-5</sub> alkyl,

R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup> and R<sup>21</sup> are hydrogen,

R<sup>24</sup> and R<sup>25</sup> are hydrogen or unsubstituted,

and,

R<sup>22</sup> and R<sup>23</sup> are both C<sub>1-5</sub> alkyl.

27. The complex of claim 26, wherein

R<sup>14</sup> and R<sup>15</sup> are independently hydrogen or methyl,

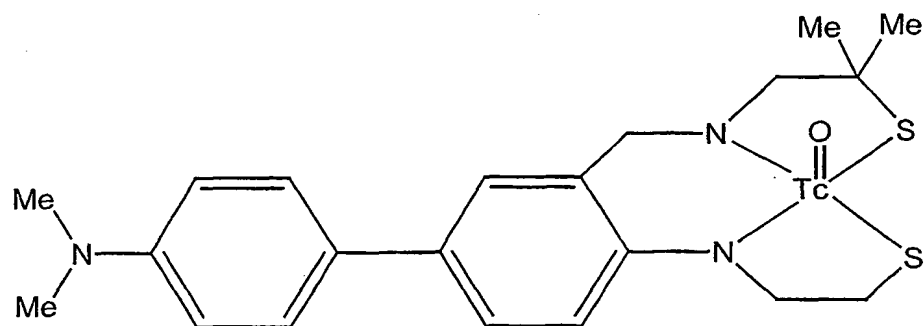
R<sup>24</sup> and R<sup>25</sup> are unsubstituted,

and,

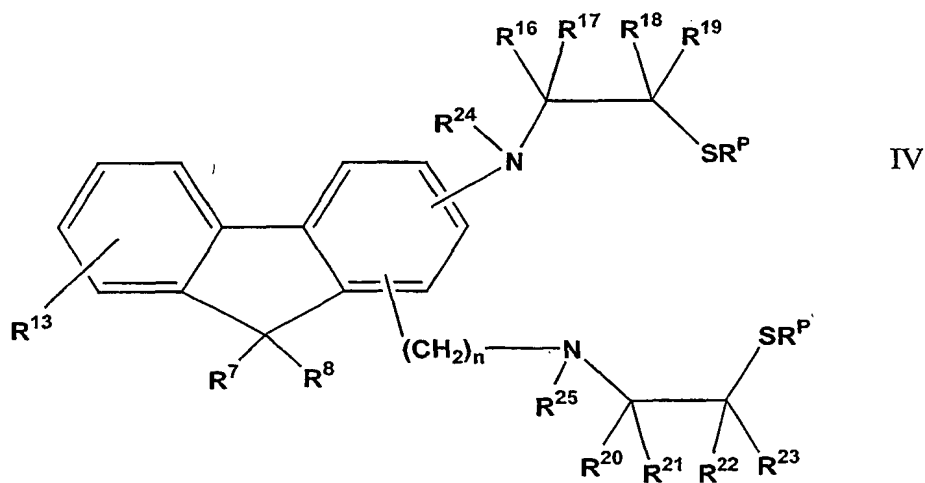
R<sup>22</sup> and R<sup>23</sup> are both methyl.

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28. The complex of claim 27 having the following structure:



29. A compound of general Formula IV:



or a pharmaceutically acceptable salt thereof, wherein:

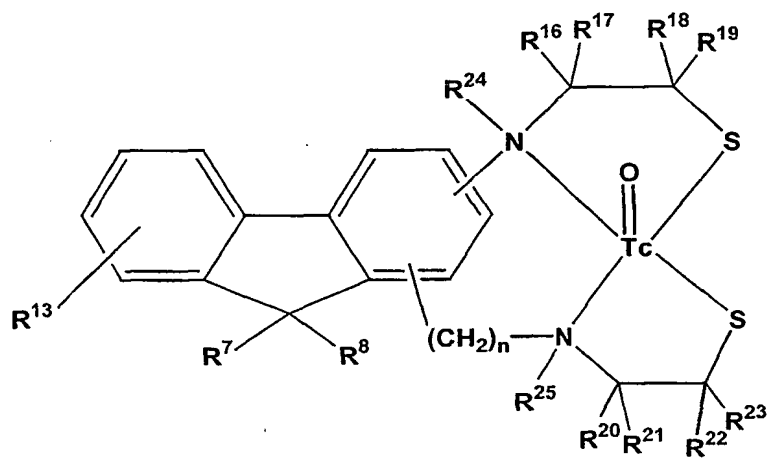
$R^{13}$ ,  $R^P$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  are as described for Formula III,

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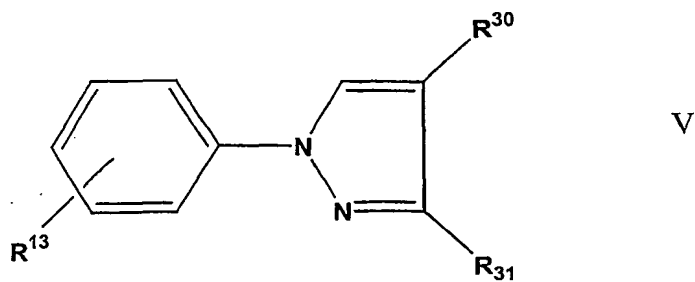
and,

 $R^7$  and  $R^8$  are as described for Formula II.

30. A radioisotope complex of a compound of claim 29 having the Formula:



31. A compound of general Formula V:



or a pharmaceutically acceptable salt thereof, wherein:

$R^{13}$  is selected from the group consisting of:

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- a. C<sub>1-5</sub> alkyl,
- b. cyano,
- c. trifluoromethyl,
- d. nitro,
- e. halo(C<sub>1-5</sub>)alkyl,
- f. C<sub>1-5</sub> alkylthio,
- g. halogen,
- h. halo(C<sub>1-5</sub>)alkoxy,
- i. carboxy(C<sub>1-5</sub>)alkyl,
- j. hydroxy,
- k. hydroxy(C<sub>1-5</sub>)alkyl,
- l. C<sub>1-5</sub> alkoxy,
- m. NR<sup>14</sup>R<sup>15</sup>, wherein
  - R<sup>14</sup> and R<sup>15</sup> are independently hydrogen, halo(C<sub>1-5</sub>)alkyl or C<sub>1-5</sub> alkyl,
- n. phenyl(C<sub>1-5</sub>)alkyl,
- o. C<sub>6-10</sub> aryl,
- p. heteroaryl,
- q. heterocycle,
- r. heterocycle(C<sub>1-5</sub>)alkyl, and
- s. C<sub>3-6</sub> cycloalkyl,

wherein said phenyl(C<sub>1-5</sub>)alkyl, C<sub>6-10</sub> aryl, heteroaryl, heterocycle, heterocycle(C<sub>1-5</sub>)alkyl or C<sub>3-6</sub> cycloalkyl is substituted with one of the following: C<sub>1-5</sub> alkylthio, C<sub>1-5</sub> alkylsulfonyl, methoxy, hydroxy, dimethylamino or methylamino,

and,

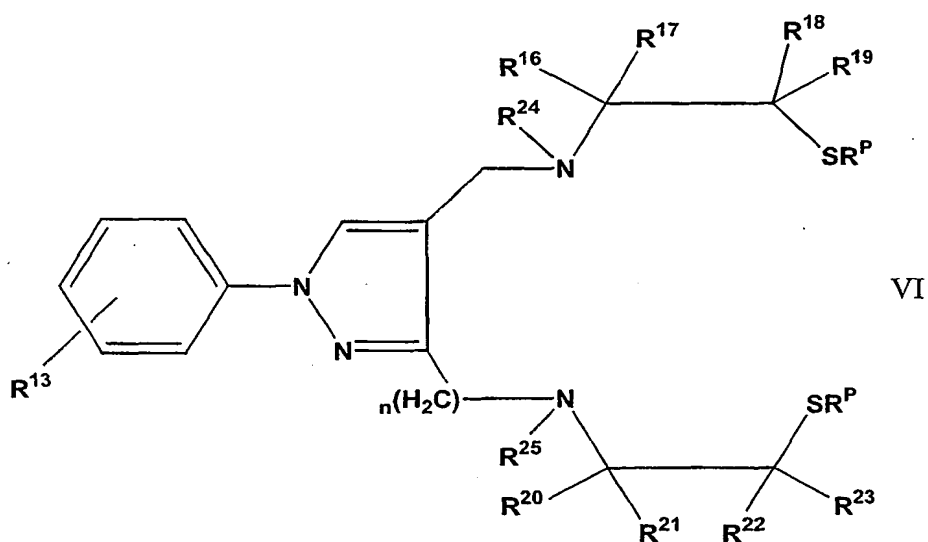
R<sup>30</sup> and R<sup>31</sup> are selected from the group consisting of hydrogen, hydroxy, hydroxy(C<sub>1-5</sub>)alkyl, C<sub>1-5</sub> alkyl, C<sub>1-5</sub> alkoxy, (C<sub>1-5</sub>)alkyl carboxy, halogen, carboxy(C<sub>1-5</sub>)alkyl, trifluoromethyl, and halo(C<sub>1-5</sub>)alkyl, phenyl(C<sub>1-5</sub>)alkyl, C<sub>3-6</sub> cycloalkyl, heterocycle(C<sub>1-5</sub>)alkyl,

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provided,

if  $R^{13}$  is other than  $NR^{14}R^{15}$ , wherein one of  $R^{14}$  and  $R^{15}$  is  $^{18}\text{Fluoro}(C_{1-5})\text{alkyl}$ , then one of  $R^{30}$  and  $R^{31}$  is selected from the group consisting of  $^{125}\text{I}$ ,  $^{123}\text{I}$ ,  $^{131}\text{I}$ ,  $^{18}\text{F}$ ,  $^{76}\text{Br}$ ,  $^{77}\text{Br}$  and  $^{18}\text{Fluoro}(C_{1-5})\text{alkyl}$ .

32. A compound of general Formula VI:



or a pharmaceutically acceptable salt thereof, wherein:

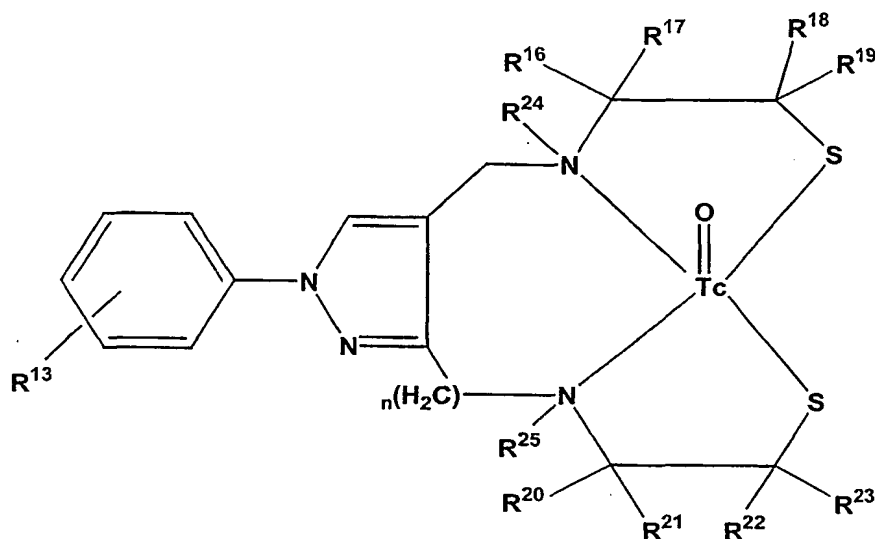
$R^{13}$  is as described for Formula V,

and,

$R^P$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$  and  $R^{25}$  are as described for Formula III.

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33. A radioisotope complex of a compound of claim 32 having the Formula:



34. A pharmaceutical composition comprising a compound of any one of claims 1-33.

35. A diagnostic composition for imaging amyloid deposits, comprising a radiolabeled compound of any one of claims 1-33; and a pharmaceutically acceptable excipient or diluent.

36. A method of imaging amyloid deposits, comprising:

- introducing into a mammal a detectable quantity of a diagnostic composition of claim 35; and
- allowing sufficient time for the labeled compound to be associated with amyloid deposits; and
- detecting the labeled compound associated with one or more amyloid deposits.